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## MICROFINANCE IN A POST-DISASTER CONTEXT: THE CASE OF THE 2004 TSUNAMI IN SRI LANKA

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## MICROFINANCE: FROM THEORY TO PRACTICE

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Access to financial services is one of the fundamental engines of development. According to recent estimates by the World Bank 2.5 billion of adults (i.e. 50% of worldwide adults) do not have a formal bank account and the low-income individuals are the ones more exposed to financial exclusion because of poverty, travel distances and monetary and non-monetary burdens associated to opening a bank account.

Financial exclusion is also correlated to unequal distribution of income. It has been estimated by the World Bank that the richest adults in developing country are more than twice as likely to have a formal account. Moreover in many developing countries access to financial services either for loans or savings is generally informal; this implies the “unbanked” pay higher fees on such services than they would if they could access formal services.

Spread nowadays in many developing countries, microfinance services have contributed to bridge the gap between the unbankable’s investment ideas and financial opportunities, helping low-income households in asset-building, risk management and consumption smoothing as well as investment in education and health through the additional income generated by credit access.

As a side-effect, microfinance has also contributed to bridge the gap between practitioners and researchers and within the latter. The growing attention to microfinance practices has lead to new fruitful research ideas in the field of developing studies, attracting also large synergies between practitioners (i.e. NGOs, non-profit foundations, associations, institutions for development, etc.) and academic researchers with heterogeneous background (psychology, economics, sociology, anthropology, etc.).

This panel has collected academic research on financial services in developing countries often carried out jointly with national or international practitioners. In particular, the following studies focus respectively on micro-insurance schemes in southern Ethiopia, on current and new potential approaches to microfinance as a tool for social inclusion and on the microfinance as recovery tool after a natural disaster in the specific context of Sri Lanka.

All of these researches directly or indirectly highlight the importance of a mutual cooperation between the academic and the practitioners’ world for a more comprehensive and policy-oriented analysis of microfinance in the international cooperation arena.

## SOCIAL INCLUSION THROUGH MICROFINANCE: AN ANALYSIS OF CURRENT APPROACHES AND NEW FOLLOW-UP PROCEDURES

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### ABSTRACT

In the last twenty years, following a fast and strong expansion, microfinance has been characterized worldwide by a relevant heterogeneity of the actors involved, especially in its main segment, microcredit. The socio-economic vulnerability of the population involved in this type of project led to the need for new concepts of sustainability, based on a schism between the institutionist and the welfarist approaches. Previous impact assessments demonstrated that a proper access to financial services improves life conditions among economically active poor persons by increasing their entrepreneurship opportunities and thus their income. Nevertheless, commercial and institutional approaches can lead astray from the original purpose, considering microfinance merely as a new tool to access financial services and not as a whole range of social processes driven by both financial and social services. Based on a research paper on the microfinance sector in Jordan, one of the most developed Arab countries in terms of micro-lending, this study analyses the different approaches of microfinance adopted in Jordan in the last years, focusing on the socio-economic impacts and the development of a relevant social return, at three levels: personal, communitarian and regional levels. The research shows the need for the implementation of new procedures within microfinance institutions (MFIs), based on specific approaches that allow the fulfillment of all the requirements related to the business cycle, in both an economic and a social perspective. From the access to financial services to the management of the micro-enterprise, the population targeted by the MFIs faces a diverse range of challenges, therefore loan officers should act as social workers and business developers, adopting specific follow-up procedures able to contribute to a real social impact.

### INTRODUCTION

In the last decades, microfinance, and its main component microcredit, performed one of the most relevant sector growths, especially within the financial and socio-economic development system. Microfinance is recognized worldwide as the provision of financial services (savings, credits and insurance) to low-income persons carrying out productive activities and excluded by the standard financial system because of their socio-economic conditions and high risk profile. Therefore, microfinance represents one of the main tools for poverty reduction and socio-economic growth, especially in developing countries. Together with other similar tools, microfinance, especially with the microcredit supply, but also with the relevant impact of savings and insurance programs, represented a new approach for poverty alleviation. It approaches the target population without creating a dependency relationship, but looking at beneficiaries as micro-entrepreneurs that need a specific tool to empower their conditions with their own work and commitment. Since the first Global Microcredit Summit held in Washington D.C. in February 1997, the growth of microfinance institutions (MFIs) has been promoted in the socio-economic development sector. The strong expansion of the last thirty years is mostly related to the development of new and non-traditional methods and approaches implemented worldwide by microfinance institutions. In particular, the concept of “*group lending*” overcame collateral adverse selection problems related to information asymmetry through “*peer monitoring*” (Chowdhury, 2009).

The development of microfinance undertook different approaches, basically related to the type of the microfinance institutions (Non Governmental Organizations - NGOs, non banking financial institutions, banks), their status (regulated or non regulated), their activities (savings and credits, direct credit institutions, development projects including credit), their methodology (group lending, individual loans) and their sources of financing (deposits or external financing) (Berguiga, 2008). These different approaches are strictly related to the division, defined by Murdoch (1998) as the *microfinance schism*, between the *institutionist approach* and the *welfarist approach*. These are both based on the shared commitment of financial services provision for micro-entrepreneurs, but created a system split into what Woller described as “*two nations divided by a common language*” (Woller, 1999). Starting from a common purpose, different methodologies led to the development of a diverse range of experiences and results, depending on the way in which microfinance services are supplied, the target population selection criteria and the performance evaluation methods.

Welfarists base their position on the assumption of their commitment to serve the *very poor* (Woller, 1999). This approach considers the provision of a whole range of services, not only credit or saving, but also non-financial services,

such as specific entrepreneurial trainings and assistance able to support the target population in all the business cycle phases, under an economic and a social perspective. In some cases, an inappropriate and inaccurate administration brought to the failure of some microcredit programs, due to high unpaid rates and transaction costs (Von Pischke et al., 1983; Yaron, 1994), allowing institutionists to *attack* the welfarist approach identifying it as a threat for the effective fulfillment of the microfinance services provision (Woller, 1999). The institutionist approach is therefore based on the *logic of market* supported by different international organizations, such as the World Bank, the United Nations, the United States Agency for International Development (USAID) and the Consultative Group to Assist the Poorest (CGAP). This approach is based on the assumption of limited donors for a growing demand for microfinancial services (Ben Soltane, 2012). According to institutionists, all MFIs should aim at financial sustainability, maximizing the productivity, preferring *breadth of outreach* (number of beneficiaries) to *depth of outreach* (targeted level of poverty, usually shown by indicators such as the average loan size and the number of women beneficiaries). This approach places the institution at the center of the process, instead of the target population and the socio-economic impact or a relevant social return. What for the institutionist is a threat to financial self-sufficiency, under the welfarist approach represents a specific commitment towards social performance standards, in order to reach the common goal of reducing poverty and improving socio-economic conditions of the population excluded by the formal financial system.

This schism and the related debate proves the need for a in-depth understanding of the different approaches and the possibility to adopt and support a joint approach able to serve and reach different targets of the population and to fulfill both social and financial requirements. Starting with a theoretical overview of the *microfinance schism*, the paper analyses the results of a field research on the microfinance market in Jordan, which aimed at studying the microcredit supply in one of the most developed countries of the Middle East and North Africa (MENA) region, in terms of microfinance provision. The results will show the lack of a proper follow-up procedure and social impact assessment, except for rare cases where the institution had recently started to adopt this kind of tool. The *social blanks* identified during the research led to a methodological analysis that examines the core microcredit procedural steps, underlining some social measures considered highly relevant for the sector commitment. In the conclusions, the paper proposes a reflection on more social oriented procedures implemented by microfinance institutions. This includes an evaluation of the current gaps, valid not only for the Jordanian experience, but also for other developing countries where micro-entrepreneurs need a proper, specific and personalized support for the socio-economic growing process.

## THE MICROFINANCE SCHISM AND THE RELATIONSHIP BETWEEN SOCIAL AND FINANCIAL PERFORMANCES

Besides structural differences in terms of approaches and methodologies, microfinance has been defined (Woller, 1999) as a heterogeneous movement characterized and driven by a shared commitment to provide financial services for the development and growth of micro and small enterprises run by persons automatically excluded by the formal financial system due to their socio-economic conditions and the subsequent high risk profile. This common aim didn't prevent the development of different approaches. These concern the debate on the best way to achieve microcredit main goal and the use of the diverse range of tools that allow having an impact on poverty alleviation through access to financial services. According to each side of the debate, there is a *trade-off* which implies the implementation of a "*unique model*", instead of a combined approach that would allow reaching both social and financial performance requirements (Bédécarrats et al., 2011).

In the late '90s the failure of some microfinance institutions brought about the need of a debate between the two sides. The institutionists emphasized the achievement of financial self-sufficiency through breadth of outreach. They supported a *financial system* where microfinance is implemented by a large-scale approach, profit seeking MFIs and where positive beneficiary impacts are assumed (Woller, 1999). In order to accomplish this model, each institution should maximize productivity and effectiveness, raising interest rates to face the transactions costs (Ben Soltane, 2012). The development of this approach precedes two relevant trends of the last years: on one side, the upgrade process of microfinance institutions from an "*NGO*" and "*Non-Profit*" status to a regulated one, based on a profitability and market logic (De Briey, 2005). On the other side, an on-going downgrading process that brings traditional commercial banks to the discovery of new markets and new target populations, once considered as high risk.

Institutionists point out the difficulties in keeping a model based on social performances and standards without a careful financial administration and strategy. Welfarists instead base their approach on depth of outreach and the acknowledgment of the original social purpose of the movement, emphasizing the social impacts and livelihoods improvements reached through the access to financial services, without assuming them by any financial indicators. Welfarists also underline the importance of different non-financial tools and services that somehow are not considered by the institutionists, due to the high financial requirements. The vulnerability of the population targeted by socio-economic development tools such as microfinance requires the provision of a complete range of services. Beyond the access to credit of financial services, these can support and ensure the socio-economic development of the entrepreneur. Technical and social trainings, for instance, could enhance and develop certain skills that the target population requires to face all the direct and indirect challenges of the business cycle. In order to follow these methodologies, welfarists may require subsidies, which are instead eschewed by institutionists. Though, this belief does not consider that the main innovations implemented by the sector in the last years (group-lending and village banking) came from *subsidized* MFIs

(Woller, 1999). Furthermore, the analysis proposed by Woller (1999) considers, in the evaluation of *subsidy*, a distinction between a *social* investor and a *selfish* one, driven by different motivations and expectations towards the MFI's achievements, smoothing the institutionists' fears about donors' availability. This brings to relevant considerations related to the importance that the elaboration of *impact assessments* represents within each MFI. These assessments are unnecessary in an *institutionist system* but are a priority for a MFI depending on subsidies (Woller, 1999). Welfarists also consider the current microfinance evolution under the *logic of market* as a threat for the population usually targeted by these programs, as it could lead to a selection distortion and a marginalization of the poorest persons in favor of the ones considered more affordable and creditworthy (Chao-Beroff, 1997). Apart from any biased opinion, the risks related to the commercialization of microfinance seem to be real, with deep changes, not just in target population selection criteria, but also in the range of activities implemented, the indicators considered in the monitoring and the importance of social impacts in the evaluation of the intervention.

Recent studies (Bédécarrats, 2012) underline the need and the feasibility of combined models that go beyond the inner lack of communication between the two factions, overcoming the mutual distrust and the idea that just one of the approaches could lead to the achievement of the common goal. Financial and social performance therefore became relevant topics in the microfinance system, fostering the need for a specific evaluation, focused on the debate on the possible combination between the two. In the social and financial performance debate, it is relevant to consider that the factor analyzed for the financial debate has always been relatively clear and unquestioned throughout the years, referring usually to the ROA – Return on Assets, cost per borrower and portfolio quality (among all, the PAR 30). Instead, the debate regarding how to assess and measure the social performance of MFIs has been crucial. In the last ten years, the Social Performance Task Force (SPTF) has been working on the realization of a specific kit of standards of social performance for MFIs. As shown by previous researches, the social performance has been approached by four main dimensions, including “*serving larger numbers of poor and excluded people; delivering high-quality and appropriate financial services; creating benefits for clients and improving the social responsibility of MFIs*” (Bédécarrats et al., 2011; Hashemi, 2007). Therefore, the major relevance of social performance led to different researches aiming at proving a direct trade-off between the two performances. The main difficulty of these kinds of studies concerns the management of the data considered during the analysis, in most of the cases elaborated by the MIX – Microfinance Information Exchange, self-reported and largely unverified (Bédécarrats et al., 2011). The analysis conducted by CERISE, involving institutions from 51 countries, shows some relevant relations between financial and social performance, about their compatibility and the need for a specific mix that allows keeping all the financial requirements without underestimating social performance practices. The research underlines the relevance of the development of non-financial services able to improve customer satisfaction and payback capacity, though at first these may have a possible negative impact on efficiency and sustainability. Another study, based on Social Ratings elaborated by MicroFinanza Rating (Hoepner et al., 2012), considered the relation between social and financial performances. The research shows a parabolic relationship between client protection (external social performance) and financial sustainability, designing a *U shape* curve. Investing in social responsibility could therefore ensure clear impacts on financial performances; negative at the beginning, with the initial social performances improvement, but positive once a strong client protection has been achieved.

A proper analysis on the social commitment is also suggested by evidences of *mission drifts* of MFIs (Copestake, 2007). This trend is generated by a confusion related to the presence in the sector of diverse and heterogeneous institutions, and a *conflict* between financial sustainability and social performances. The contemporary activity of commercial banks, non-governmental organizations and financial institutions may be contributing to a general confusion regarding the common commitment and the relevance of social and financial performances. A proper reflection could, therefore, contribute to a more social oriented sector, focusing on the social impact achievements and its relevance within the institutions, clarifying and pointing out the different activities implemented.

An approach made by these inputs, considering the importance of a strategic mix between the two performances and the related practices, opens to new considerations and to the second part of this paper, based on a field research in Jordan. The survey allowed estimating the provision of microfinance services in the Arab country, the importance of social assessment and the subsequent development of a different methodology based on specific follow-up criteria and a social commitment focus.

Over the years, a large and not very productive debate split microfinance into a rigid *dichotomy*, where both institutionists and welfarists fall into the easy and automatic belief that just one way could be viable. This *dichotomy trap* (Woller, 1999) brought to failures in both sides, whether due to lack of financial sustainability, or missed achievements of basic social impacts. Nowadays, MFIs and academic researchers need to reconsider the whole microfinance and microcredit process under an updated point of view. This evaluation, based on actual and previous field experiences, could consider the diverse range of needs and difficulties that micro-entrepreneurs and economically active poor face daily.

## AN OVERVIEW OF THE MICROFINANCE SERVICES PROVISION IN JORDAN

The study presented in this paragraph refers to a field research conducted in Jordan in June and July 2012, preceded by an analysis of the existing scientific support (among all, Planet Finance, 2007; CGAP, 2009; Saqfahait, 2010), that



led to a better understanding of the peculiarities in the Jordan experience<sup>1</sup>. Jordan is nowadays one of the most developed countries in the MENA region, with more than 250,000 beneficiaries (MIX, 2013) and a heterogeneous presence of MFIs, for their status, methodologies and services supplied. As in other developing countries, the microfinance sector in Jordan is a rather young sector that reached its maturity a few years ago; MFIs started their activity in the Kingdom in the 1990s, during a time where the country was facing a high unemployment rate, rising prices and a consequent growing poverty. The market has been supported by the Ministry of Planning and International Cooperation (MOPIC) and the United States Agency for International Development (USAID) that launched a specific program (Access to Achievement of Market-Friendly Initiatives and Results – AMIR) in 1998, that was able to provide financial and technical support for the development of three major Jordanian microfinance institutions.

The cited research considered the major microfinance institutions in Jordan, deciding to exclude from the analysis other relevant experiences carried on by international organizations (United Nation Relief and Works Agency – UNRWA – Microfinance Department) and local institutions, such as the Poverty Pockets Empowerment Project promoted by the MOPIC and implemented by four local NGOs. This choice has been motivated by the need to evaluate the approaches of the seven main MFIs in the country, building an overview of the current situation and focusing on the strengths and threats detected during the survey data collection and reported during the research.

Through an in-depth analysis on each MFI involved in the study, the research underlines the main features of the microfinance sector in Jordan, indicating a context mostly oriented to social performance, with high rates of women participation and an average loan that ensures the focus on the economically active poor of the country. In almost all the MFIs considered by the research, the product development is quite advanced and the local outreach, based on an average of 10 local branches per institution, seems to guarantee a strong link between the institutions and the beneficiaries, except for the rural areas, where the market needs to increase its intervention. One of the first features that clearly appear when analyzing microfinance in Jordan is the low presence of Islamic financial products, with only three MFIs providing them with a percentage on the current portfolio below 1%. Among all, the most evident results of the research regard the social performances of the MFIs, underlining, despite a good depth of outreach (average women participation above 90% and poor-targeted average loan), that just some of them realized constant social impact assessment. In most of the institutions, existing evaluation didn't lead to a proper reflection on the social responsibility and the quality of the intervention. This lack reflects weak follow-up procedures observed in almost all the institutions. In most cases, the relationship between the borrower and the institution, in the figure of the loan office, became quite weak after the credit provision. The whole process cycle seems affected by a *strong commercial approach*, with some crucial steps, such as target selection, project evaluation, follow-up procedures and social impact assessment, characterized by rigid market logics and strong financial and efficiency constraints. This approach, implemented within the different MFIs in a heterogenic way and with different outputs, clearly led to the growth of a stable and efficient market, which is one of the most developed in the MENA region. Though, as mentioned in the first part of this paper, a strong and intense microfinance commercialization may affect the original mission of the institutions. Unless we recognize the differences in the positions adopted by commercial banks and financial institutions implementing - not just in Jordan - microfinance, a deep reflection on the role of MFIs in the poverty alleviation sector is mandatory. This experience follows the recent sector downgrading mentioned in the first paragraphs, but within this paper the aim is not the analysis or the evaluation of these institutions' intervention. It offers an overview and an in-depth analysis that led to a reflection of how microfinance procedures could be implemented in a different way. Social impact assessments and non-financial services and activities represent a relevant cost for the institution, especially if they are constantly repeated during the process. It is, therefore, easily understandable, expected and reasonable that a MFI driven by a logic of market and dependent on a *selfish investor* won't invest in any social activity that apparently won't have specific and clear effects on the efficiency and the financial performance. Some authors (Bédécarrats et al., 2011) report a direct link between social and financial performance. It is therefore desirable that also commercial MFIs could invest more on social performances, pushed by international donors that would look for both financial and social achievement, through new tools such as social audits.

As in any other microfinance market, the institutions involved in Jordan are characterized by a strong heterogeneity, most of all declaring a not for-profit orientation and strong social values. This view and approach should automatically create expectations regarding non-financial services and their impacts on the target population, considering the role that the institution is assuming. Therefore, the first analysis of the data collected led to a deep reflection of the social performances of the Jordanian MFIs, observing that, despite the aforementioned remarkable financial results, the social performances seem to be quite weak. During the first semester of 2012, Tamweelcom, one of the biggest Jordanian MFIs, started a deep socio-economic evaluation based on the *Progress out of Poverty Index*<sup>2</sup>, considering household improvements, business income and family conditions. The project, supported by Grameen - Jameel Microfinance Ltd., aims at improving the target selection, follow-up procedures and development of new products. Although five out of the seven institutions considered in the survey mentioned an on-going social impacts assessment, in most cases the evaluation was not properly matched with a follow-up procedure that could provide a clear monitoring of the social conditions before, during and after the microcredit. Without respecting specific criteria and regular monitoring, this

<sup>1</sup> N. Saqfahait and A. Bigio, Analyzing the Features of Microfinance in Jordan, *International Research Journal of Finance and Economics*, Issue 111, pp. 69-85, July, 2013.

<sup>2</sup> For further information about the Index and the Jordanian form, visit <http://www.progressoutofpoverty.org/>.

could lead to an overestimation of the changes - positive or negative - observed in the beneficiary's enterprise and life, considering variables that are not directly dependent on the access to microfinance services.

The research pointed out that most of the considered MFIs represent relevant and successful cases of socio-economic development, providing a valuable support to the most vulnerable population brackets. Therefore, the financial performances contribute to a healthy sector, but with many *social blanks*. Follow-up and social assessment gaps do not allow providing a complete microfinance support and most of the beneficiaries do not access the holistic support that would allow facing all the different challenges related to his enterprise and his vulnerable conditions.

The *social impact lacks* led to a further analysis that could design new tools and procedures able to overcome part of the issues. These considerations, based on field experiences in difference microfinance and socio-economic development environments aim at providing alternative ways to the current microfinance structures and processes in Jordan and in other developing countries where social impacts seem to be affected and overlooked by the commercialization process.

## FOLLOW-UP PROCEDURES

The analysis of the main results observed in the field research mentioned in the previous paragraph led to an analysis focused on the social performances in Jordan and other countries where microfinance has been implemented as one of the poverty alleviation and socio-economic development tools. As detailed, the microfinance market in Jordan is characterized by relevant financial performances, but also by some social issues that require an in-depth analysis on the main weak points underlined in the study (among all, follow-up procedures and social impacts assessment). Most of the considerations concern the figure of the *loan officer* and his relationship with the *borrower* (or beneficiary in the case of broadening the focus to microfinance and not just microcredit). The commercialization of the sector could bring about a relationship between loan officer and borrower that is close to the commercial bank framework. This would be based on a financial focus and totally subjected to market logics not considering the relevance of social approaches in the development of micro and small enterprises within a highly vulnerable context.

As already mentioned, this methodological debate concerns the whole microcredit process, focusing on some core steps that could lead to a more social-oriented approach: 1) *Target selection and field visit*, 2) *Business and social orientation and commitment*, 3) *Business and social follow-up*, 4) *Socio-economic impact assessments*.

### Target selection and field visit

The Progress out of Poverty Index, currently adopted by one of the Jordanian MFIs, is one of the tools that could facilitate the beneficiary selection, targeting the vulnerabilities and verifying the likelihood that the participant and his/her household are living below the poverty line (or other margin considered by the institution). The analysis of the vulnerability, matched with a first business evaluation could ensure a first pre-selection of the participant (and his/her family<sup>3</sup>). This would allow gathering basic, but relevant, information concerning the main individual and familiar situation (internal conflicts, external threats for any household member, health conditions, access to education and nutritional habits) and the business project, new or on-going. In order to reach the accomplishment of a complete socio-economic profile, the loan officer should carry on at least one home visit and a visit to the place where the business is running or the entrepreneur is proposing to start a new one. This first phase and contact with the borrower and his/her family is highly important for at least two reasons: firstly, it allows verifying the target selected according to the institution's mission and vision. On the other hand, it enables the next steps ahead based on the main social and economic opportunities and threats identified during the pre-selection. According to the context and the organization's structure and mission, it may be advisable to draw a training plan, including both entrepreneurship and social topics, such as gender equality, assertiveness and self-confidence. Dealing with socially oriented topics, properly matched with economics ones, may ensure the required knowledge for the oncoming challenges. A specific training programme, as other non-financial services, represents a relevant and demanding institution's investment, but it is definitely a tool that can positively impact on the business and, therefore, on the payback capacity, as well as a clear individual improvement.

### Business and social orientation and commitment

Once the loan officer has concluded the first social and technical visit, both the familiar and entrepreneurial situation will be clearly defined, ensuring the elaboration of a basic *business plan* that will evaluate the feasibility of the

<sup>3</sup> It may be possible, during the analysis of the microcredit process, the mention of a relationship *loan officer-family* rather than a *loan officer-borrower*, due to social and environmental thoughts that consider the high vulnerability of the target population involved in the process as a constraint that recommends to manage a direct relationship with all the family and not just with the entrepreneur. The development of the micro and small enterprise could be widely affected by emergencies related to the whole household and the loan officer has to be previously informed about all the possible socio-economic risks that may arise. At the same time, starting a new business or enforcing an existing one is always an achievement reached by all the family, therefore the loan officer should consider all the strengths within the entrepreneur, starting from the most direct and close level, the household.

proposed project. The preparation of the plan, preferably done mutually with the beneficiary (as a second - practical - step of the theoretical training), could underline the main needs of the business, outlining the priorities on the oncoming investment through the microcredit. In the business plan phase, the loan officer should always leave the responsibilities to the beneficiary, enhancing his/her self-confidence and managerial skills (above all, decision making and technical competences). In order to foster the business development and the economic follow-up, the business plan should include basic steps, goals and achievements. These are quantitative benchmarks that will also positively impact on the personal motivations of the entrepreneur and his/her family. During this phase, it could be possible to consider the elaboration of a proper *social plan*, according to the expertise and social commitment of the institution. This would be matched in some parts with the economic and quantitative achievements of the business plan. This plan will reflect on the social information, individual and familiar, gathered during the home visit. The main aim of this mutual social deepening concerns the acknowledgment of specific *social actions points*, both for the loan officer who will carry on the follow-up and the beneficiary who is directly involved. These *points* are qualitative achievements that are related to certain situations that can positively affect the household conditions and, consequently, the beneficiary and his/her project. These action points should be measured qualitatively, but with precise steps, such as a better nutrition habit, household sanitary conditions and, in the case of school-age children, education involvement and interest. Together with the quantitative achievements of the business plan, the social improvements detailed in the social plan will be part of the follow-up methodology implemented by the loan officer. This will be based on the belief that any individual and familiar threat could seriously affect the business development, therefore also affecting the payback capacity and the institutional financial sustainability. Based on the adopted approach and the institution's mission and vision, this social evaluation could be part of a commitment between the beneficiary and the institution, in order to *use* the microcredit as a direct tool to work on some social weaknesses. This would constrain the credit renewal to some *social achievements*, or just serve as additional - but extremely relevant - support for the loan officer during all the follow-up phase, improving his acknowledgment regarding the personal sphere of the entrepreneur.

### Business and social follow-up

One of the main social weaknesses identified during the field study in Jordan concerns the follow-up procedures implemented by most of the MFIs. In some cases, the institution only schedules a visit subsequent to delays or problems in the repayment. This means that their actions are clearly too late, after the occurrence of the problem and its main effects, bringing about serious difficulties to design and plan any solution. In other situations, the field visits were not as frequent as they should be according to their main aim, which should be the constant monitoring of the project and checking of the threats identified during the first visit. The simple fact that the beneficiary is regularly paying the scheduled fee doesn't imply that is not facing any kind of economic or social difficulties. The over-indebtedness, one of the biggest problems in the microfinance sector in Jordan, in some cases comes from the need to pay a previous debt that is not possible to accomplish with their own resources. These difficulties make it easier for the beneficiary to open a new debt just to fulfill this prior obligation. Therefore, the regular repayment, despite representing a positive sign, cannot be used as a justification for not applying a rigorous, constant and necessary follow-up procedure. According to the context, the follow-up procedures should include at least one monthly visit, considering the high vulnerability of the target population and the frequency with which the occurrence of social and economic issues could lead to relevant changes in the existing family and business stability. The previous microcredit steps should ensure a proper wealth of information regarding the entrepreneur, his/her family and the business. The monthly field visits will be carried on, checking all the improvements or difficulties observed, taking into consideration both the economic and the social commitments defined before the microcredit. The regularity of field visits should be personalized (even if, as mentioned, it should be at least monthly), according to beneficiary's vulnerabilities and repayment plan. The need for constant and regular monitoring would suggest matching and crossing the visits with the repayments schedule; in case of a monthly repayment, the institution could organize the visits between each repayment, creating a bimonthly direct contact that will ensure a proper follow-up and socio-economic support. The first contacts between the loan officer and the borrower are crucial to define a relationship characterized by mutual trust and to consider the field visits as what they really are, a socio-economic monitoring of the family and the business, and not a formal control set up by the microfinance institution.

### Socio-economic impact assessments

In the last few years, the global changes involving microfinance brought about the need for more specific and regular social impacts assessment, especially if required by *social investors* interested in the *social rate of return*, the target population and their socio-economic improvements. Most of the MFIs involved in this study - except for the *profit oriented* commercial institutions - are currently performing a social impact assessment, adopting different criteria and socio-economic variables. The general concern that rises during the sector analysis has been the lack of implementation of a social approach by almost all the Jordanian MFIs. Therefore, the research questioned the relevance of an assessment devoid of a proper follow-up procedure and social information gathered during the microcredit cycle. The same happens with the economic information, which often is limited to the feedback obtained from the hypothetical regular repayment. One of the main risks of social impacts assessments as any other social development tool evaluation,



concerns the analysis of improvements not directly related to the microcredit, but to concurrent circumstances that the target population may be facing. The idea of a more social oriented microcredit cycle comes from the need for a new approach that is able to smooth these social blanks, getting the loan officer closer to the population and creating an information flow that could identify the improvements or the issues directly related to the microcredit. This would help to make a better analysis and to propose solutions also for the other situations being faced by the beneficiary, approaching the role of the loan officer to that of a social worker. Such an approach will render almost automatic the comparison of the qualitative and quantitative results at the end of the cycle with the ones gathered during the first visits and the elaboration of the *business* and *social plan*. The institution will consequently get a more realistic idea of the main issues faced by the target population, adapting the microcredit cycle to their needs and the previous feedback.

During the aforementioned four core steps, the procedures specified could provide a more social oriented process when matched to other procedures customized and related to the program implementation framework. The main doubts regarding an approach focusing too much on social performances would definitely be related to its financial sustainability. Previously mentioned research (Bédécarrats, 2011) demonstrated that financial performance strategies can be combined to the social ones, without facing a rigid *trade-off*. All the procedures, extra-activities (such as the *social plan* or the frequent home and business visits) proposed in this paper, imply clear and evidently higher transaction costs. Nevertheless, a better social orientation, together with a positive operational and repayment response by the borrower, can balance the financial efficiency loss and contribute to more relevant and deeper social impacts.

This paper does not want to underestimate the importance of financial performances, but aims at focusing on certain *gaps* identified during the field research in Jordan. A more social oriented approach that is not properly matched with specific strategies and procedures would lead to efficiency and sustainability problems. MFIs should consider that investing in better social performances will not make the fundraising more difficult. On the contrary, reaching the main social achievements, or at least getting closer, will point out the need for a deeper commitment towards the social impact of the sector by donors and institutions.

## CONCLUDING REMARKS

This paper is strictly related to the results gathered during the field research in Jordan, initially focused on a better understanding of the microfinance provision in the Arab country. The first results analyzed during the survey, showing a strong commercial orientation by the MFIs, led to a further in-depth study based on the social commitment of microfinance.

The theoretical overview in the first paragraph allowed considering the different approaches implemented over the last few years. The failure of several institutions led to new sector debates and to an evaluation of the relationship between financial and social performances, outlining the need to overcome the social impacts assumption based on good financial results. Therefore, microfinance should not just be considered as the provision of financial services and products, but as a tool that includes both financial and non-financial services. An analysis of a specific microfinance sector should consider the MFIs' ability in fostering the development of micro and small enterprises, enhancing personal and professional skills and improving the socio-economic conditions of the entrepreneur and his/her family. The provision of financial services without a holistic perspective will threaten not only the social commitment, but also the financial goal - above all the credit repayment. A concrete microfinance provision should therefore lead to concrete and relevant impacts on three levels: the personal, the community and the regional level. The first level refers to personal achievements, such as better education or nutrition and women empowerment, while the other two concern wider spectrum impacts based on job creation and local development. A proper analysis should be able to consider the role of MFIs' intervention toward these achievements, gathering information regarding the main needs and expectations of the population involved in the process.

Despite strong and relevant financial results, the field research in Jordan observed several social gaps, especially related to the follow-up procedures and social impact assessments. Specific considerations regarding vulnerabilities and needs of the population normally targeted by these programs allowed outlining and proposing proper procedures that could ensure a more social oriented intervention. The analysis points out four core steps in the microcredit process where appropriate and customized procedures could ensure a stronger relationship between the institution and the beneficiary. The differences between each context led to the development and provision of diverse services and procedures, based on the main features of the population involved. Therefore, this paper does not want to propose a new and complete methodological process, even if it focused on specific procedures. It aims at stimulating a reflection on the relevance of the social impact of microfinance and the provision of services by institutions so different from each other, but all included under the same *umbrella* of microfinance institutions. At the same time, though, the deep commercialization led to the need for a design of some core steps and activities that are able to ensure a stronger social perspective, underlining that a micro or a small enterprise cannot be properly supported without considering social and personal issues that clearly affect the borrower and his/her environment.

Further analysis concerning specific procedures and activities within the microcredit process in each context, possibly starting from tools like the Progress out of Poverty Index, could therefore enhance a social awareness that in the last few years seemed to be weakened by financial and market constraints. MFIs have to redefine their own structure and methodology according both to financial and social performances. A proper academic support will be

essential during this phase, but it should start by effective field surveys focused on the main features of the environment, the institutions and the micro-entrepreneurs, considering the vulnerabilities and the needs of the population and developing new processes and products able to have an impact on poverty alleviation.

## NOMENCLATURE

AMIR	Achievement of Market-Friendly Initiatives and Results Program
CGAP	Consultative Group to Assist the Poorest
MENA	Middle East and North Africa Region
MFI	Microfinance Institution
MOPIC	Ministry of Planning and International Cooperation
NGO	Non-governmental Organization
PAR	Portfolio at Risk
PPI	Progress out of Poverty Index
ROA	Return on Assets
SPTF	Social Performance Task Force
UNRWA	United Nation Relief and Works Agency
USAID	United States Agency for International Development

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## THE WILLINGNESS-TO-PAY FOR INSURANCE: EVIDENCE FROM SOUTHERN ETHIOPIA<sup>1</sup>

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### ABSTRACT

Rainfall variability is a major problem in Ethiopia. The ability of Ethiopian farmers to deal with drought risk is made more scanty by the extension of land plots, which does not allow for a proper crop diversification, and by incomplete and inefficient financial markets which limit appropriate risk management financial strategies. Insurance can represent indeed a potential drought risk transfer mechanisms. However, the sustainability of a traditional drought insurance scheme is flawed by moral hazard, adverse selection, high administrative costs and risks not locally diversifiable. A promising alternative is index-based insurance whereby indemnities are related to an "index", rather than to verifiable losses. Several pilot projects and experiments have been carried out over the last fifteen years. This work is meant to contribute to such vast literature by reporting the results of an experiment carried out with Ethiopian farmers. Based on a sample of 120 rural households in the Wolayta zone - Southern Ethiopia, we aim to estimate the willingness-to-pay (WTP) for a drought index-based insurance product. Data were collected in 2013 through a discrete-choice experiment where household-heads were asked to make a choice out of different choice sets. Additional economic, financial and social data have been collected since 2011, within a wider research conducted on a larger sample including the one used in the current experiment. Data are analyzed employing a Mixed Logit model that allows for random preferences and overcomes a problem of the Multinomial Logit model, i.e. the irrelevance of independent alternatives (IIAs). The study is still in the implementation phase. Main preliminary outcomes are presented.

### INTRODUCTION

The consequences of man-made or natural shocks in rural areas of poor countries can be devastating but even non catastrophic adverse conditions may challenge farmers. Traditional strategies followed to comply with this vulnerability, such as having some savings or diversify production, or informal insurance mechanisms may not be effective (Fafchamps, 1999) while the adoption of formal insurance has generally been considered as challenging both for farmers and for the insurers (Brown, 2001). Many examples of failures in crop insurance are reported in the literature; schemes based on estimated crop losses suffer of moral hazard which loosens farmers' commitment in production with an adverse selection effect where only bad farmers buy insurance (Hess, Richter and Stoppa, 2002). On the opposite, relatively new products base the compensation on the value taken by properly designed, standardized, verifiable climatic indexes (precipitation, wind-speed, temperature, solar radiation) with statistical correlation with crop yields which cannot be influenced by the customer behaviour (Bryla, Dana, Hess, Varangis, 2003). Prevailing contracts are area yield, livestock, weather indexes or weather derivatives (Hess, Richter, and Stoppa, 2002; Skees, 2003). Results of pilot projects based on these contracts are expected to reduce farmers revenue volatility (Hill and Robles, 2011). However, take-ups seem still meagre (Sarris, 2013; Clark and Kalani, 2011) and weak points are stressed. They are related to basis risk, to their cost<sup>2</sup> and to limited delivery channels. Elabed et al. (2013) and Hill et al. (2011) suggest index products with more than one risk included to reduce the impact of basis risk and to improve WTP, but the latter also depends on many other factors.

Several studies attempting to better understand WTP of rural farmers in poor countries mainly rely on experiments, given that the market still has to be developed (Breidert, Hahsler, and Reutterer, 2006, as quoted by Hill et al., 2011).

<sup>1</sup> This research, based on a field experiment, is conducted by the "Finance and Development – FinDev" group of the Research Center on International Co-operation of the University of Bergamo in co-operation with Wolayta Soddo University (WSU-Ethiopia), College of Business and Economics (CBE). The two universities co-financed in equal share the research. The study represents a complementary analysis to the main research project named MicroRiMI (Microfinance, Risk Management and Innovation) through which FinDev has been collecting data – with the co-operation of WSU- in the same area of Ethiopia since 2010. MicroRiMI is sponsored by the University of Bergamo, Giordano Dell'Amore Foundation (Milan), Cariplo Foundation and Lombardia Region. The current paper is a very preliminary version of the main outcomes of the experiment. The full paper will benefit of further development of the analyses and will be complemented by a second, refined, round of the experiment foreseen for November 2013. Davide Castellani contributed to this version with literature review, experiment design and data analysis and interpretation; Belaynesh Tamire worked on data collection and data entry and Laura Viganò worked on literature review and experiment design.

<sup>2</sup> For more details, see Skees (2003), Hess (2003) and Larson, Varangis and Anderson (2002).

While experiments have been considered useful for the learning process that they trigger in potential customers (Patt et al., 2009), their efficacy has been challenged in some studies when limited correlation was found between outcomes from experiments and choices of real insurance (McIntosh et al., 2013) although for other authors this is not the case (Norton et al., 2011 and 2012). Factors affecting WTP pertain to the customer characteristics or the type of actors involved. Patt et al. (2009) point out that most studies focus on economic explanations while behavioral factors (emotions and trust in the suppliers, in the product or in oneself) may matter more. Among factors quoted by many authors, the attitude toward risk may be mentioned. Correlation between risk aversion and WTP may have opposite signs, sometimes counter-intuitively; a negative correlation was found, under specific conditions, by Giné et al. (2008) or Hill et al. (2011). According to Sakurai and Reardon (1997), Gautam et al. (1994), the demand depends, among other things, on households risk management strategies. Wealth is also relevant. Patrick (1988) found higher level of net worth associated with lower premiums. Assets, in fact, may allow to better absorb income shocks; however, even the opposite may be true if ownership of larger amount of assets induces the farmer to take risky decisions and, therefore, to buy insurance (Akter et al., 2009 find positive relationship between land owned and insurance). An ambiguous behavior related to wealth is proved by Clarke and Kalani (2011) which find the highest take-up ratio with intermediate wealth levels; in fact, too poor farmers may have nothing to lose and do not need to insure, while very rich farmers may have other options than weather index insurance (Castellani et al., 2013). Cole et al. (2009), find that insurance demand is sensitive to cash on hand but this depends on the source of cash; for example, Sakurai and Reardon (1997) find negative significant effects of off-farm income and livestock holdings on demand for formal insurance as both allow to implement self-insurance mechanisms. Indirectly linked to cash holdings, Giné et al. (2008) find that credit constraints reduce the purchase of insurance, possibly because it limits cash availability. On the other side, being indebted could negatively affect WTP if all cash is used to repay the loan. Related to the characteristics of the farm, Hill and Robles (2011) found that that farmers with poorer soil quality buy more insurance and Sakurai and Reardon (1997), stress the dependence of demand for drought insurance on the agro-climatic zone. The nature and types of different disaster risks are also important factors for insurance participation decision. Related to farms profitability, absolute value of income influences WTP (Akter et al., 2009) but income variability is relevant as well (Fraser, 1992). A quite controversial effect may be expected by the presence of aid as, while it undoubtedly increases available cash, it distorts demand. Experiments are often based on an initial “artificial” cash endowment which may have important distortions on behaviors during the game (Sarris, 2013) and may even compromise the possibility to implement a real project at market conditions (not subsidized).

Besides individual, households, or area characteristics, also the type of channel or strategy to offer insurance may make the difference, both in terms of accessibility and in terms of knowledge and trust by the potential customer. The latter could be increased if the delivery happens through risk sharing groups (Cole et al., 2009) and if marketing visits are constantly offered<sup>3</sup>. Education may help increasing knowledge of products and, then, trust (Akter et al., 2009) although some studies do not find direct correlation between education and WTP (but this may depend on the type of education provided). Knowledge, in turn, depends on the complexity of the contract, defined by its conditions: price, maturity, delivery methods, index chosen, triggers or thresholds. Price is relevant for Cole et al. (2009) while, as mentioned, basis risk is outlined by many studies (Fuchs and Wolff, 2011; Hill and Robles, 2011).

The ones quoted are just some of the possible patterns in exploring WTP for crop or drought insurance in poor rural areas. The Ethiopian case has been heavily analyzed. Among the relevant studies, Hill and Viceiza (2010), conducted a field experiment on a sample 261 Ethiopians of Silte Woreda (Southern Ethiopia), exploring the link between fertilizers purchase and the offer of weather insurance. Insurance showed positive effects on the purchase of fertilizers. Clark and Kalani (2011) studied the rationality of actual purchases of insurance using data on 378 farmers from the Ethiopian Rural Household Survey (ERHS), and conclude that while behavioral explanations to the low take-up rate offered by other studies could be weak, farmers buy few contracts because of rational decisions, due to the type of product offered. Hill and Robles (2011), working with farmers of Silte Woreda on the idea that farmers are different in their production and preference structures, show the need to offer diversified insurance contracts. Hill et al. (2011) studied 1,400 Ethiopian households for 15 years as part of the Ethiopia Rural Household Survey; they explored many aspects of WTP related to the product and farmers’ characteristics; for example, they found that insurance contracts are more likely bought by educated, wealthy and proactive potential customers. The role of local risk sharing groups as channels was outlined as well. Norton (et al., 2012) implemented a study based on experimental games in Tigray in 2010, within the HARITA<sup>4</sup> project to compare different choices among options on the use an initial endowment of 70 birr: taking the drought index insurance, investing in simulated savings accounts, participating into risk-sharing groups, or holding cash. Preference for higher frequencies of payouts was recorded together with more frequent choice of insurance over savings and over participation in risk sharing groups and, in some cases, over cash holdings. McIntosh et al. (2013) focused on fertilizers and their relationship with weather index insurance in Amhara region. They considered many factors among which credit and insurance availability and worked on two different research approaches: a survey estimating WTP and the observation of actual purchases. Although not completely comparable, also due to some weaknesses in the offer of the real product, slightly positive or even negative correlation is found between the two approaches. Purchases in the study sample were lower than those of the total population. Behavioral variables or basis

<sup>3</sup> As stated, Patt et al. (2009) consider experiments as possible ways to increase trust.

<sup>4</sup> Horn of Africa Risk Transfer for Adaptation.



risk (probably not well known) were little influential. Lack of cash was an obstacle to take-ups which were mainly driven by in cash endowments (vouchers offered by the researchers).

Besides the numerous weather insurance pilots projects, in Ethiopia, practical implementations are increasing. Among them, the Ethiopian Project on Interlinking Insurance with Credit in Agriculture (EPIICA) offered by Nyala Insurance Company (NISCO) and Dashen Bank in Amhara region (quoted by McIntosh, 2013). Nahu (2010) describes several products, including a weather derivative through which the World Food Program made the Government of Ethiopia buy a coverage by AXA Re in 2006 in order to obtain eventual financial resources for food aid in case of extended drought, and the one offered by the Ethiopian Insurance Corporation (EIC) in co-operation with the World Bank in 2008. The other products described are offered by NISCO: a pilot Double Trigger Multiple Peril Crop Insurance (DTMPCI) and a Weather Index Crop Insurance. The first was an area yield insurance started in 2007 in Oromia State; the second was first offered in 2009 in collaboration with OXFAM America and World Food Program in Tigray and Oromia regions, then extended in the South and in Amhara Region. Overall, the author lists some weakness and strengths of these pilots. Among the first, lack of awareness by farmers, of a suitable regulatory framework, and, very important, lack of reliable data. Also delivery channels are limited as insurance companies are based in towns and this increase transaction costs. However, the author stressed the increasing attention of the government to small farmers, the expected establishment of a reinsurance intermediary in Ethiopia, and the abundance of research and technical assistance. The author concludes with a positive judgment on these experiences by stressing the need of collaboration among the different actors and, at the farmers' level, the importance to also consider other risks faced by farmers. This latter statement also emerged in Volpi (2005) who, being involved in the first phases of the implementation of the pilot project by the EIC and the World Bank in 2008 mentioned by Nahu (2010), stressed the reasons why farmers were not so reactive to the proposed insurance contract. In fact, after the instruction phase, only 26 farmers bought the contract. Volpi (2005) stressed the rationality of farmers who stated that the contract was only addressing one important risk but several other risks equally important were affecting their vulnerability. Therefore, they could not afford to pay for only one of them.

The next section describes the experiment conducted in this study and reports the preliminary results.

## EXPERIMENT AND ADMINISTRATION OF THE SURVEY

In the study, we take a full client's perspective instead of a supply's perspective. The objective of is to have an understanding of who is the potential client and of the willingness-to-pay for drought insurance. No formal crop insurance was indeed available in the area where the survey was conducted. The hypothetical product was not designed according to the real rainfall data and tuned on the base of farmers' feedback, but we adjusted a product that was already available in another area of the same region<sup>5</sup>. The product is a weather derivative that pays a fixed indemnity when either a moderate or severe shortage of rainfall occurs in a specific month of the agricultural season (Hill and Robles, 2011). Farmers can get as much securities as they are willing to buy. This pilot-project was employed as a benchmark in order to build reasonable hypothetical products that farmers can afford. The actuarially fair price is thus unobserved but we can expect that it lays in one or more of the different premium-indemnity combinations that we consider in the discrete choice experiment.

In the preliminary phase of the experiment, we carried out focus-group interviews in the villages in order to understand farmers' perception about drought risk and to outline a shared definition of moderate drought and severe drought, respectively.

The categories of the product attributes are five: covered season, intensity of drought, supplier, premium and indemnity. In particular, the covered season category has two levels: *Belg* season, i.e. the small rainy season between the beginning of March and the end of May, and *Meher* season, i.e. the big rainy season between the beginning June and the end of September. The insurance supplier category has four levels: microfinance institution (MFI), farmers' cooperative, informal insurance association (*Iddir* in local name), and *Kebele* (the smallest administrative unit of Ethiopia).

The survey was administered by a team of ten trained enumerators to 120 farmers over a period of three weeks, in March 2013. The farmers were randomly selected from a larger sample of 360 farmers already involved in a three-year data collection project (2010-2013). The surveyed farmers are from three *Kebele*, of the Wolayta area located in the SNNPs Region of Ethiopia<sup>6</sup>.

The three villages are Hembecchio, Kutto Sorfella and Abala Faracho. Each village is representative of one of three agro-ecological zones. The zones are named by the Ethiopian Ministry of Agriculture after the characteristic crops: ginger and coffee zone, barley and wheat zone, and maize and root crop zone.

## EMPIRICAL METHODOLOGY

In this section, we analyze the household's optimizing behavior regarding the choice among different insurance alternatives. A household  $n$  faces a choice among  $J$  alternatives in each of  $T$  choice situations. We suppose that the

<sup>5</sup> See Hill and Robles (2011) for a comprehensive discussion of the product.

<sup>6</sup> For the sake of brevity, in the remainder of the paper we improperly refer to the *kebele* as villages.



utility that the household obtains from choosing alternative  $j$  is a linear combination of the insurance product attributes,  $x_{njt}$ , and a random term,  $\varepsilon_{njt}$ <sup>7</sup>:

$$U_{njt} = \beta_n' x_{njt} + \varepsilon_{njt} \quad (1)$$

Whereas the attributes are observed by the analyst, coefficient vector  $\beta_n$  is unobserved for each  $n$  and varies across households with density  $f(\beta_n | \Omega)$  where  $\Omega$  are the parameters of this distribution that are to be estimated. The stochastic element,  $\varepsilon_{njt}$ , is also unobserved and different assumptions on its distribution result in different choice models. As usually common in the choice analysis, we impose the condition that  $\varepsilon_{njt}$  is independent and identically distributed (IID) extreme value type 1 (or Gumbel) across all  $n, j$  and  $t$  (Hensher, Rose and Greene, 2005). Conditional on  $\beta_n$ , the Logit probability of household  $n$  choosing alternative  $j$  in the choice situation  $t$  is:

$$\pi_{njt}^{std} = \frac{e^{\beta_n' x_{njt}}}{\sum_i e^{\beta_n' x_{nit}}}, i = 1, \dots, J \quad (2)$$

The standard Logit model, as expressed by (2), does not allow for unobserved characteristics that can induce correlation among alternatives in a choice situation and among choices over time. The Mixed Logit model, i.e. the unconditional logit probability, overcomes these restrictions by allowing for the variance in the unobserved household-specific parameters and, therefore, does not exhibit the property of Independence from Irrelevant Alternatives (IIA) (Revelt and Train, 1998). The Mixed Logit probability is:

$$\pi_{njt}^{mix} = \int \left( \frac{e^{\beta_n' x_{njt}}}{\sum_i e^{\beta_n' x_{nit}}} \right) f(\beta_n | \Omega), i = 1, \dots, J \quad (2)$$

The (2) is a weighted average of the logit formula evaluated at different values of  $\beta_n$ . It follows that the Mixed Logit probability for the sequence of choices is:

$$\pi_{njt}^{mix} = \int \prod_t \left( \frac{e^{\beta_n' x_{njt}}}{\sum_i e^{\beta_n' x_{nit}}} \right) f(\beta_n | \Omega), i = 1, \dots, J \quad (3)$$

In (3), we want to estimate  $\Omega$ , that is, the population parameters that describe the distribution of individual parameters (Revelt and Train, 1998).

## HOUSEHOLDS' CHARACTERISTICS

We include several variables that proxy for household's characteristics in order to allow for potential heterogeneity in the attributes' coefficient. An important household's characteristic is net income. It is, along with the price, the usual component of demand models. However, we are unable to properly estimate net income. The expenses borne by the household over the period when the income is generated are to be deducted but the current data available do not allow for a proper costing<sup>8</sup>. For that reason, the net income is not included in the analysis.

As alternative proxy of the household's economic capacity we use the household's net-worth, that is, the difference between total assets and total financial liabilities. Total assets include agricultural assets, non-agricultural assets, and financial assets<sup>9</sup>. Financial liabilities are made up of all outstanding debts. The net-worth is also a proxy for the ability of the household to cope with negative shocks and make up for unexpected expenses. However, we do not control for the different liquidity costs of assets. Instead of considering the absolute value of net-worth, we test for a non-linear relationship with the insurance take-up probability by taking net-worth percentiles.

The land holding is not considered in the assets since in Ethiopia it is not an household's property, cannot be transferred or used as collateral<sup>10</sup>. Farmers are used to establish crop-sharing or short-term rent agreements. The size of land is however important in the decision of what to crop and to what extension. Besides, when the land does not provide for a living, farmers are forced to seek for alternative source of income. We control for the households' land

<sup>7</sup> The expression (1) is how the utility is usually represented in discrete choice models (Hensher, Rose and Greene, 2005).

<sup>8</sup> This is one of the objectives of the three-year research project that is expected to end in December 2013.

<sup>9</sup> The non-agricultural assets are: bicycles, motorcycles, radio sets, mobile phones, jewels and watches, tables and chairs, and beds. The financial assets are savings and outstanding credits.

<sup>10</sup> In Ethiopia the land is owned by the government.

holdings in terms of *timad*, that is, a local unit of land<sup>11</sup>.

Other characteristics may proxy for the interviewee's risk aversion such as the interviewee's age, gender, and the number of family members. Others, such as the education, can influence the ability to understand the insurance product and properly appreciate the insurance's utility. We consider if the interviewee is both literate and the grade reached.

Since trust and transaction costs are significant determinants of financial contracts, we expect that being client of a microfinance institution, member of a local cooperative, or part of one or more *Iddirs*, i.e. local informal insurance parties, can increase the respective likelihood to prefer one supplier instead of another one.

Finally, we include some dummy variables to control for basis risk. In our case, the basis risk is the probability of receiving an indemnity when the households are not affected by drought, or not receiving an indemnity when it is affected. The dummy variables are built on stated perceptions of how different is the rainfall pattern at the household's field compared to where the weather station is located, and how much more or much less it rains at the weather station than at the household's field.

Table 1 reports all attribute and control variables.

**Tab. 1 – Variables.**

Variable name	Definition	Unit	Type
<b>Product's attributes</b>			
Premium	Cost of the insurance contract	ETB	Integer
Indemnity	Expected payment in case of drought	ETB	Integer
Belg	If Belg is the covered season	0,1	Dummy
Perceived probability	How often a moderate or severe drought occurs	Years	Integer
Cooperative	If cooperative is the supplier	0,1	Dummy
MFI	If MFI is the supplier	0,1	Dummy
Iddir	If Iddir is the supplier	0,1	Dummy
<b>Households's and interviewees's characteristics</b>			
Networth lower than 2nd centile	Networth $\leq$ ETB 4,055	0,1	Dummy
Networth between 2nd and 4th centiles	ETB 4,055 < Networth $\leq$ ETB 6,902	0,1	Dummy
Networth between 4th and 6th centiles	ETB 6,902 < Networth $\leq$ ETB 11,155	0,1	Dummy
Networth between 6th and 8th centiles	ETB 11,155 < Networth $\leq$ ETB 14,780	0,1	Dummy
Networth greater than 8th centile	Networth > ETB 14,780	0,1	Dummy
Log of landholdings	Household's landholdings	Log(Timad)	Continuous
Age	Interviewee's age	Years	
Gender	If the interviewee is male	0,1	Dummy
Number of fam. members	Number of members who live with the head	N.	Integer
Illiterate	If the interviewee is illiterate	0,1	Dummy
Education	Grade reached at school	N.	Integer
Cooperative client	If client of at least one cooperative	0,1	Dummy
MFI client	If client of at least one MFI	0,1	Dummy
Iddir member	Number of Iddirs where the HH is member	N.	Integer
Very different pattern and less rain	Very different rainfall pattern and less rain on average	0,1	Dummy
Somewhat different pattern and less rain	Somewhat different rainfall pattern and less rain on average	0,1	Dummy
Somewhat different pattern and more rain	Very different rainfall pattern and less rain on average	0,1	Dummy
Very different pattern and more rain	Very different rainfall pattern and more rain on average	0,1	Dummy

## ESTIMATES OF MARGINAL EFFECTS AND WILLINGNESS-TO-PAY

A preliminary analysis was carried out considering all the variables listed in Table 1. However, in the final model we retained only those variables that turned out to be statistically significant and sufficiently consistent over different model specifications. Table 2 presents the estimation results of the Conditional Logit (CL) model and the Mixed Logit (ML) model. The estimates coefficients of the ML are almost all significant and the overall goodness of fit is somewhat higher than in the CL. Besides, the standard deviations of the two random coefficients are statistically very significant and important in terms of size. This suggests that the ML is more appropriate.

The premium coefficient is negative as expected and the marginal effect implies that, for instance, an ETB 100 increase in the insurance price decreases the likelihood to purchase it by 28%. The price's marginal effect accounts for the opposite behavior, that is a positive coefficient, of high net-worth households who, given the average experiment

<sup>11</sup> Four *timad* are approximately one hectare.

premium, are more willing to purchase insurance by 13%, on average. Unexpectedly, the indemnity coefficient is also negative and reflects unobservable motivations. Given that premium and indemnity are almost uncorrelated by experiment design, one reasonable explanation is that the greater the indemnity the lower the trust in that the indemnity will be actually paid. However, further analysis is required.

Despite the majority of interviewees stated to deem *Meher* as the most important agricultural season, the results hint that they prefer to insure against a possible drought in the *Belg* season. The likelihood to choose an insurance product that covers the production in the *Belg* season production is greater, on average, by about 6%. There are, though, some differences among households in terms of preferred season. In particular, households that have got a net-worth between the 2<sup>nd</sup> and 4<sup>th</sup> centiles and households that believe that the rainfall pattern on their field is somewhat different from that at the weather station and it rains more on average, tend to prefer the *Meher* season. On the other hand, households that believe that the rainfall pattern on their field is very different from that at the weather station and it rains less on average, tend to prefer the *Belg* season. These results put forward that *Belg* season is believed to be more exposed to drought risk.

**Tab. 2 – Estimation results.**

Variable	Conditional Logit		Mixed Logit		
	Estimate	Std. Err.	Estimate	Std. Err.	Marg. Eff.
Premium	-0.0242***	0.0027	-0.0229***	0.0032	-0.0028
Premium * Networth greater than 8th centile	0.0108**	0.0043	0.0126***	0.0049	0.1273
Indemnity	-0.0183***	0.0019	-0.0089***	0.0033	-0.0012
Belg season	0.4257*	0.2522	0.8322***	0.3015	0.0578
Belg season * Networth between 2nd and 4th centiles	-0.9615**	0.4254	-1.4150***	0.5159	-0.1056
Belg season * Very different pattern and less rain	0.6398	0.4044	0.7637*	0.4338	0.0570
Belg season * Somewhat different pattern and more rain	-0.9973***	0.2834	-1.1430***	0.3123	-0.0853
Perceived probability	0.0120	0.0176	-0.3092***	0.0916	-0.0427
Std. Dev. Perceived probability			0.2647***	0.0626	
Cooperative	-0.8737***	0.2501	-0.8162**	0.3206	-0.0337
Std. Dev. Cooperative			0.8608***	0.2985	
Cooperative * Illiterate	0.7645**	0.3299	0.9399**	0.4117	0.0367
Cooperative * MFI client	1.1080***	0.3299	1.3776***	0.4413	0.0538
MFI	-0.1021	0.3615	0.5569	0.4645	Not sig.
MFI * Networth between 2nd and 4th centiles	-1.8004***	0.5081	-2.6278***	0.6825	-0.0916
MFI * Illiterate	1.2242***	0.3698	1.6568***	0.4592	0.0577
Iddir	-0.3271	0.2875	0.1556	0.3675	Not sig.
Iddir * Networth between 2nd and 4th centiles	-1.585***	0.5181	-2.2017***	0.6311	-0.0758
Iddir * Illiterate	0.6566*	0.3365	0.7934**	0.3863	0.0273
Number of obs.	1872		1872		
LR - $\chi^2$	421.74***		58***		
Pseudo-R2	0.325		0.371		

\*\*\* Significance level at 1%

\*\* Significance level at 5%

\* Significance level at 10%

The perceived probability, i.e. how often a moderate or severe drought event occurs, lowers the likelihood to purchase drought insurance. This means that there is preference for insurance against moderate drought since it recurs more frequently and may be forecast with less uncertainty than a severe drought. Furthermore, poor rural households are probably impatient and discount long-term realizations more than the better-off. For instance, an increase of 3 years in the perceived probability of drought decreases the likelihood to purchase insurance by nearly 13% on average. The standard deviation of the perceived probability is also statistically significant but small, and implies that for 12% of the population the coefficient is positive instead.

With regards to the preferred insurance supplier, the results are somewhat uncertain. The only statistically significant coefficient is for the cooperative variable. If the insurance products were distributed by the cooperative instead of the administrative unit, i.e. *Kebele*, the willingness to purchase would decrease by 3% on average. The standard deviation is also very significant both statistically and in economic size. For 39% of the population the coefficient is indeed positive. The cooperative as insurance supplier is mostly preferred by illiterate interviewees and MFI clients. On the contrary, the coefficients for the MFI and *Iddir* variables are both positive but not statistically significant. However, as well as for the cooperative case, illiterate interviewees have a preference for both the MFI and the *Iddir* instead of the *Kebele*. MFI and *Iddir* are, on the contrary, less preferred by households with a net-worth between the 2<sup>nd</sup> and 4<sup>th</sup> centiles.

Table 3 presents the average estimates of the willingness-to-pay for the insurance attributes computing as the negative ratio of the attribute's coefficient and premium's coefficient. First, households would pay a lower premium by ETB 0.46 for every increase in the indemnity by ETB 1. Second, households would pay about extra ETB 11 for an insurance product that covers the *Belg* season. Third, for every more year in the perceived drought probability, households would pay a lower premium by nearly ETB 15 on average, but this is true for the 88% of the sample. The remaining 12% of the sample would pay more for an insurance product against a long-term severe drought. Finally, households would pay about ETB 13 less on average if the supplier was a local cooperative instead of the *Kebele*, but the 39% of the surveyed households would pay a higher premium.

**Tab. 3** – Willingness-to-pay estimates.

Average Willingness-to-Pay (in ETB)			
Attribute	Mean	SD	WTP < 0
Indemnity	-0.46	-	-
Belg	11.16	-	-
Perceived probability	-15.40	13.23	88%
Cooperative	-12.58	43.06	61%
MFI <sup>a</sup>	28.13	-	-
Iddir <sup>a</sup>	-1.81	-	-

<sup>a</sup>Coefficients are not significant

## STANDARDIZED VS. CUSTOM-MADE INSURANCE PRODUCTS

Figure 1 and Figure 2 report the distributions of perceived probability of moderate and severe drought respectively. The stated frequency of occurrence of a moderate drought is very similar in the three villages considered, with an overall mean of 2.4 years and a standard deviation of 1.03 years. Besides, except for Kutto village, the shape of the distributions is also akin. Some differences can be observed in the frequency of severe drought but these are almost trivial in relative terms. For the severe drought case, the overall mean is 15.4 years and the standard deviation is 7.57 years. The differences are more remarkable when we look at the shape of the distributions with a median value between 10 and 20 years.

This preliminary analysis of the perceived probability provides some support to the design of a sole insurance product against the risk of moderate drought and, with appropriate caution, also against the risk of severe drought. In the development stage, the perceived probability must be however compared with the actual drought rainfall distribution in order to design a suitable product.

We here employ the ML model estimates of Table 2 to assess the convenience and attractiveness of hypothetical drought insurance products. In particular, we compare an *ad-hoc* product tailored according to the interviewee's perceived drought probability and different products designed according to a reference probability. This exercise allows to estimate the likelihood to purchase a standardized product (S) against a custom-made product (CM). We take different values as reference probability of drought that correspond to the ALL distribution's mean, mean plus one standard deviation, mean minus one standard deviation, mode, and median.

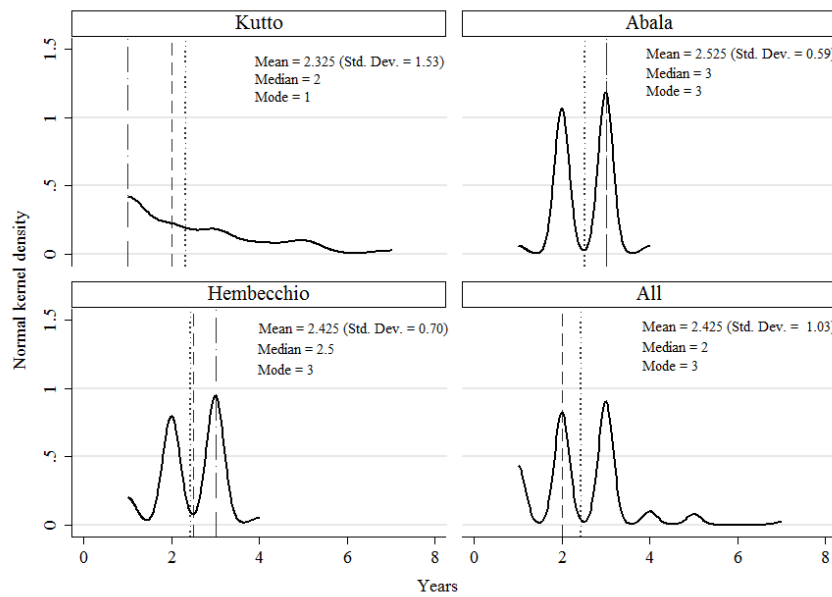
For every reference probability  $k$  and indemnity amount  $j$ , we, first, work out the equivalent fair premium (see Table 4) and, second, the market share ( $\Delta MS$ ) of CM as difference in terms of predicted aggregate likelihood of purchase. The latter is calculated as follows:

$$\Delta MS(k_j) = \frac{1}{N} \sum_{i=1}^N P(CM[k, j, X_i]).$$

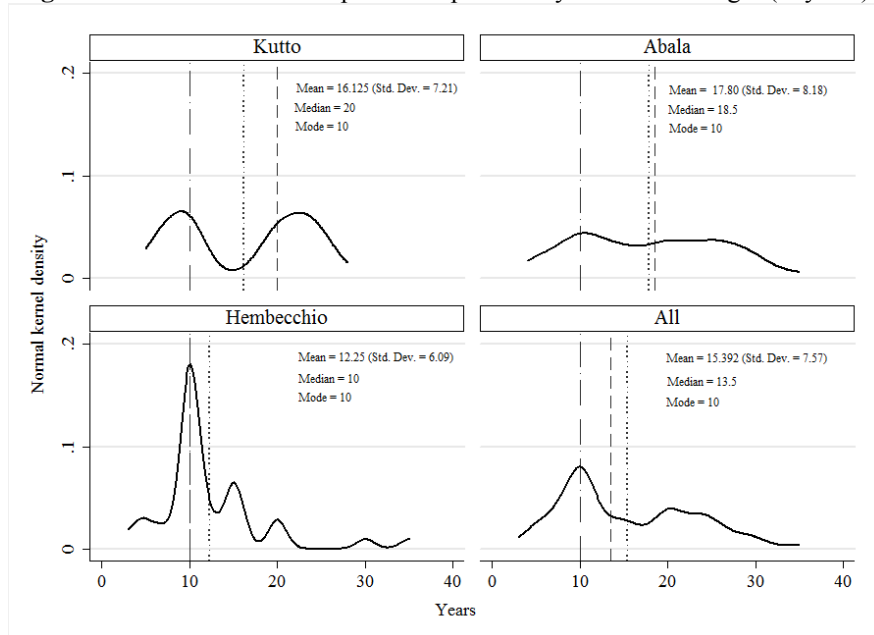
where  $X$  are household's characteristics that interact with  $k$  and  $j$ . Since the other product's attributes are the same for both products, they are irrelevant in the decision process.

We find that, first, as the reference probability is increased, the premium shrinks and the market share of the standardized product grows. Second, when the reference probability is smaller than the average perceived probability, as the indemnity increases, the market share of the standardized product falls. On the contrary, when the reference probability is greater than the average perceived probability, the market share of the standardized product increases along with the indemnity. Finally, as the average perceived probability of drought heightens, such as in the severe drought case, the market share of the standardized product becomes less sensitive to changes in the reference probability and the amount of indemnity. It follows that, in the design of an insurance product for moderate drought, a small change in the reference probability and, then, in the fair premium, can lead to a big change in the willingness to purchase insurance. On the contrary, in the design of an insurance product for severe drought, small changes in the reference probability barely affect the willingness to purchase such product.

**Fig. 1** - Kernel distribution of perceived probability of moderate drought (in years).



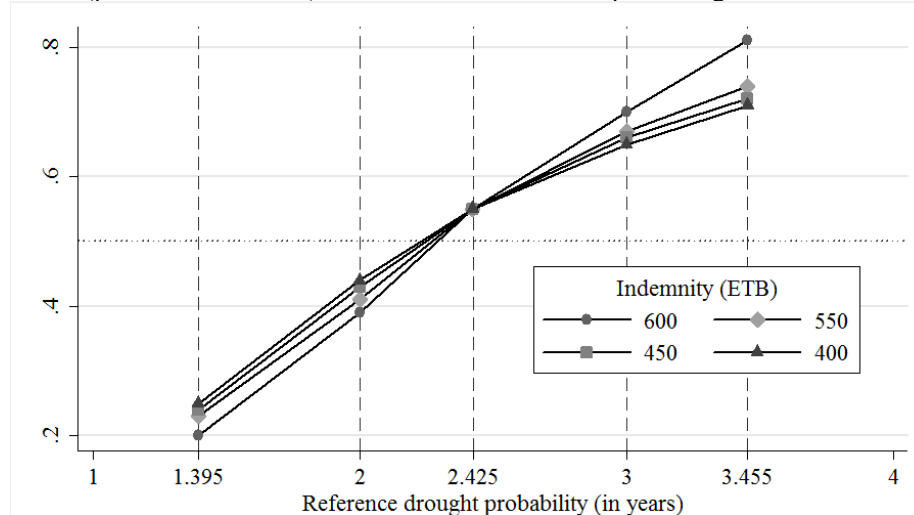
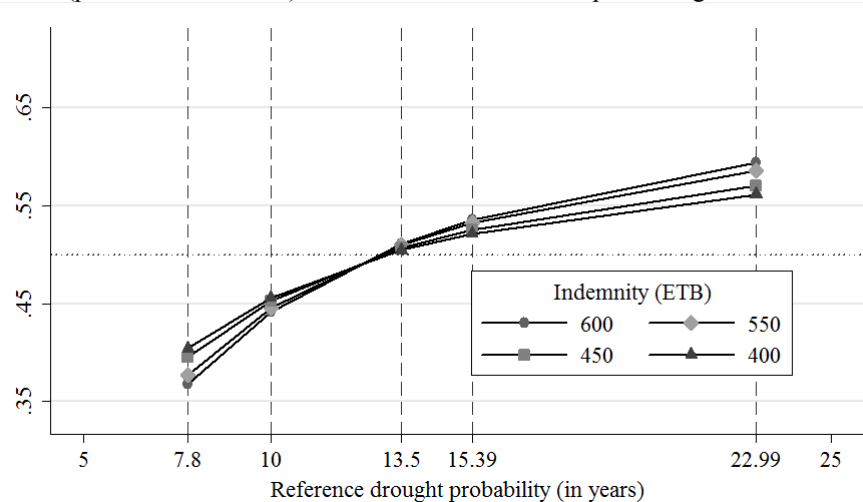
**Fig. 2** - Kernel distribution of perceived probability of severe drought (in years).



**Tab. 3** – Reference probabilities, indemnities and fair premiums.

Ref. prob. / Ind.	400	450	550	600
<b>Moderate:</b>				
1.395	286.74	322.58	394.27	430.11
2	200	225	275	300
2.425	164.95	185.57	226.80	247.42
3	133.33	150	183.33	200
3.455	115.77	130.25	159.19	173.66
<b>Severe:</b>				
7.80	51.28	57.69	70.51	76.92
10	40	45	55	60
13.5	29.63	33.33	40.74	44.44
15.39	25.99	29.24	35.74	38.99
22.99	17.40	19.57	23.92	26.10



**Fig. 4** – Market share (predicted likelihood) of custom-made insurance product against the risk of moderate drought.**Fig. 5** – Market share (predicted likelihood) of custom-made insurance product against the risk of severe drought.

## CONCLUSIONS

Crop insurance against the risk of drought is still in a pilot phase in Ethiopia and, especially in rural areas, the most of households are unaware of formal insurance in general. We carry out a stated choice experiment in three villages in Southern Ethiopia in order to assess the willingness-to-pay for an insurance product that pays a fixed indemnity if a drought occurs. We find that premium, indemnity and perceived drought probability are important determinant in the insurance take-up. The estimated coefficients of the three variables are all negative. Whereas a negative coefficient is expected for premium and perceived probability, it is counterintuitive for the indemnity and further investigation with alternative hypotheses testing is necessary. A market simulation analysis suggests that households are more sensitive to premium and indemnity changes when the insurance product is against moderate but more frequent drought events.

This study suffers, in particular, from a proper design of the insurance product. Further research should allow for different payment alternatives and let household buy more than one contract. A second round of the experiment is planned for November 2013 to address these points.

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## MICROFINANCE IN A POST-DISASTER CONTEXT: THE CASE OF THE 2004 TSUNAMI IN SRI LANKA<sup>1</sup>

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### ABSTRACT

We summarize the joint work of academic scholars and ETIMOS (an Italian foundation involved in microfinance) for the evaluation of the intervention of the latter in Sri Lanka in the aftermath of the 2004 tsunami. After the shock ETIMOS recapitalized a local microfinance bank which faced a huge loss in its loan portfolio; then in 2007 and 2011 academic researchers conducted impact evaluations of such intervention. The main results are positive under different viewpoints since: i) the loans received after the shock were effective for the subjective and objective recovery of damaged people, and ii) the recovery aids highly damaged borrowers received enhanced a significant level of generosity among interviewed villagers.

**JEL codes:** O12, O22, G21, C91

**KEYWORDS:** microfinance, disaster recovery, altruism, life satisfaction, tsunami, impact evaluation.

### INTRODUCTION

Natural shocks produce consequences at a macroeconomic level through the destruction of material wealth and capital stock and at a microeconomic level affecting the way damaged people take decisions on several aspects of life, i.e. consumption, savings, human capital investment, trust and altruism. Under the first viewpoint, there has been a growth in the empirical macroeconomic research assessing the impact of natural shocks (see, among others, Skydmore 2001; Toya and Skidmore, 2002 and 2007; Kahn, 2005; Cuaresma et al. 2008; Noy, 2009); under the second one, an increasing number of microeconomic studies aim to assess the impact of either natural or caused-by-humans shocks on social preferences<sup>2</sup>.

More severe consequences of natural calamities can be found in developing countries relative to developed ones. In the former, especially in low-income rural areas, natural disasters often destroy all the few available resources of the household; moreover, the poor local communities are highly vulnerable to natural hazards because of their inadequate housing and poor health-care systems. The negative impact of the shocks is also magnified by the scarce socio-ecological resilience to coastal disasters of many developing countries which usually lack of efficient institutions for collective action, robust governance systems, and a diversity of livelihood choices that mitigate the effects of extreme natural hazards (Neil Adger et al, 2005).

For these reasons there is often, especially in developing countries, a close correlation between situations of economic vulnerability and increased exposure and fragility in the face of natural disasters, which in turn generate a further deterioration in the conditions of the affected communities, triggering a vicious circle between poverty and vulnerability to natural hazards. Once a given balance is compromised, the social, economic and political - but also environmental and the climatic system - arise more or less rapidly, looking for a new and different equilibrium position. The transition phase (or post) is characterized by the presence of multiple actors - social and institutional, public, private and third sector - called to intervene, as well as tools to support and help that combine among themselves to quickly restore a situation of normality and, more gradually, to address the community in the affected area towards a new horizon of growth of welfare.<sup>3</sup>

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<sup>2</sup> Among others, Cassar et al (2011) find that Thai tsunami damaged are more impatient and trusting, while Callen (2010) document damaged people become less impatient. Whitt and Wilson (2007) show higher cooperation among the evacuees after the Hurricane Katrina and similarly Solnit (2009) find that disasters harness social capital. As far as shocks caused by humans are concerned, Becchetti et al. (2013) document the civil conflict in Kenya had a negative impact on trustworthiness and, similarly, Cassar et al. (2013) show evidence of a lower amount of trust among victims of the civil war in Tajikistan.

<sup>3</sup> The post emergency context is usually characterized by: i) The decreasing, more or less pronounced, more or less immediate, of the stock of available resources, human, financial, goods and services, especially those basic necessities. ii) The presence or acceleration of processes of exclusion from access to the resources themselves for certain groups of the population or certain geographic areas. iii) The low relatedness and increased cost of coordination, with presence - especially in the first post-emergency phase - of cases of adverse selection and / or moral hazard. iv) The extreme

With this premise, *can microfinance be considered as an asset by the poor households hit by a natural disaster through which they may recover? What are the direct and indirect effects of microfinance on tsunami-damaged borrowers' income, productivity and social preferences?*

This article is a brief summary of a broader project involving academic researchers and an Italian foundation, ETIMOS, aimed at answering the questions above in the specific case of Sri Lanka. After the 2004 tsunami, ETIMOS foundation recapitalized a local microfinance institution operating in the south of Sri Lanka, i.e. Agro Micro Finance (AMF) which witnessed a severe loss in its loan portfolio caused by the insolvency of many tsunami-damaged borrowers who lost all their capital assets were unable to repay their loans. The outcomes of this intervention have been then evaluated by a team of academic researchers through quantitative and experimental methodologies in two field studies conducted in 2007 and 2011/2012. The full set of findings presented in academic publications, working papers and communication material are briefly summarized in a consistent way in this article.

In general, ETIMOS's intervention through the capital injection to AMF was effective for disaster recovery under different viewpoints. The tsunami negatively impacted the Sri Lankan borrowers' wealth, income and life satisfaction. In particular, the negative effect of tsunami on life satisfaction has been estimated to be more than twice as its effect on income because of the significant drop in current income and the psychological/emotional effects. Damaged borrowers received advantageous loan conditions in terms of interest rate and loan size by AMF through which they were able to repay previous loans and start their recovery phase. Such loan policy is estimated to be effective since the loan to income ratio positively affected borrowers' income and worked hours especially for damaged relative to non-damaged borrowers. Finally, highly damaged borrowers received significantly more aids for the recovery showed higher generosity in a money donation experiment in comparison with less damaged borrowers (who, instead, received less help).

The descriptive and econometric evidence suggests a positive impact of microfinance on borrowers' monetary and non-monetary recovery and highlights a hidden channel through which it affected their altruistic preferences, namely indirect reciprocity. The main lesson we learnt from these fieldworks is that microfinance can work as an effective recovery tool in post-disaster contexts which can be used to restore the subjective and objective well-being of damaged individuals as well as to enhance for them a high level of generosity.

The remainder of the paper is the following. In section 2 we describe the characteristics of the context and the project implemented by ETIMOS in Sri Lanka. In section 3 we present the methodology of the impact analysis and in section 4 we summarize the main findings.

## MICROFINANCE, THE TSUNAMI IN SRI LANKA AND THE INTERVENTION OF ETIMOS

The devastating effects caused by the tsunami of 26 December 2004 have had a strong emotional impact in the world, with dimensions rarely seen before. The International community has had an immediate reaction and promised massive aid interventions in terms of unilateral, bilateral and multilateral aid. In the period that followed the tsunami were collected / or promised \$ 13.5 billion for the emergency and reconstruction of which more than 5.5 billion were private donations. If we look at the proportions of public funds by governments and multilateral banks and private funds, it can be seen over the last few years a strong growth trend in favour of private fundraisers. In 2003, 15% of the "humanitarian funds" came from private sources; in 2005 the percentage rose to 40%.

The implementation of activities has proved to be fast and efficient, even if the difficulties and external (governments and local partners) and internal (international implementing agencies and NGOs) obstacles have caused some slowdowns and loss of efficiency and effectiveness of the actions undertaken. The main difficulties, encountered by donor countries and agencies / organizations in the implementation of emergency response and reconstruction, were the existing weaknesses in national and local capacities of the affected countries.<sup>4</sup> Despite the difficulties and the shortcomings, the generous aid programs provided to affected populations, have helped to ensure their safety and start planning for the future. Within six months, there was already a palpable perception of recovery: the kids were back in school and health facilities and services had been partially rehabilitated in all country<sup>5</sup>.

In this context some elements, both in case of national and international emergencies, suggest to consider also the tool of microfinance among those activated in the post-emergency. Through microfinance it may be more likely to achieve precisely those poorer segments of the population who, being already at serious risk of survival, appear to be the most exposed and vulnerable in the event of severe crisis, whatever nature they have. Moreover, given the steady

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variability of resources to be distributed, also determined by the now chronic anaemia of public budgets. v) Lack of full involvement of communities and local governments, according to the logic bottom-up, to take charge of a joint planning process, with a view to overcoming the very first phase of an emergency. vi) Most significant impact on the most vulnerable, poor population and micro- entrepreneurial activities.

<sup>4</sup> Armed conflicts in Indonesia and Sri Lanka, government policies, bureaucratic procedures often confused, politicized and centralized decisions (including the choice of target beneficiaries and the selection of the same), problems of corruption and distrust of leaders or local administrators, restrictive and often imposed by national and local authorities, have created serious obstacles to the international and the impact, inevitably, was less effective. The implementation was determined by the local contexts but also from inefficiencies and lack of coordination among International agencies, organizations and NGOs.

<sup>5</sup> The data relating to reconstruction in Sri Lanka were provided by RADA, (Agency for Reconstruction and Development), an agency created by the President of Sri Lanka in November 2005 with the aim to coordinate and monitor overall operations of post-tsunami reconstruction and development, including all damaged sectors and areas.



decrease of resources allocated globally to public development aid, to which is added the trend in recent decades to the progressive replacement of development aid with those for the emergency, any initiatives to promote tools that optimize, streamline and enhance the increasingly scarce resources, have become highly topical (and, of course, be more effective). In practice this means including among the actions to be implemented in response to an emergency situation, a specific measurement of micro-credit to be activated.<sup>6</sup>

The microfinance institutions (MFIs), despite having legal status differently from country to country are characterized by a high level of knowledge and presence in the local area, by the use of tools based on trust and not on collateral requirements, for effective support for micro-enterprise and gender policies, local communities. These features allow a rapid reactivation not only of the financial micro system, but also, to those ones related to the trust and hope for life, relational and social capital of a community or an entire country. In addition, by offering additional services of technical assistance, the MFIs allow their customers to receive a service with higher added value, which aims to support them in all the different needs (savings, investment, capacity building) that may occur during the term of the loan. The analysis of the specific operational context requires usually include the presence of flexible financial instruments, able to respond to the various needs that may arise in the post-emergency situations.<sup>7</sup>

In the initial phase of a post-disaster context, microfinance plays a subsidiary role. The local economy in a situation of arrest and stagnation is weak and unstable; people become dependent on foreign aid provided in the area of emergency by the government, international donors, individuals, from the mobilization of communities and local networks. MFIs themselves, supported by donors, take action to provide immediate relief and rescue operations to achieve both of its customers in the communities in which they work. The MFIs are in fact widely spread throughout the territory, they have relationships with local administrative authorities, are present in every village through their own agents of credit, the Credit and Saving Cooperatives, Community Based Organisations (CBOs) through which they play microcredit programs. The action is facilitated in case of need for the rapid mobilization and knowledge of the territory.

The second stage of the emergency, defined post-emergency, is the moment when the people affected by the catastrophic event fail again to achieve a minimum level of security. However, it is the phase in which microfinance becomes a technical tool for intervention by helping the rapid resumption of economic activities starting from the base of the destroyed communities and hence spreading widely. It may encourage savings for groups and can intervene with forms of insurance and leasing products, with credits for the construction of houses or to purchase assets for production that provide the opportunity - for those affected - to resume economic activities and to be able to re-generate income for the family.

In Sri Lanka, the post-emergency has generated a huge range of needs to be met: owners of small shops and traders who had to replace stocks lost goods, buy new goods for resale, repair shops; craftsmen who needed money to buy back small tools and equipment destroyed; small domestic herds of animals (mostly poultry) destroyed that had to be distributed; farmers who had lost their crop and needed funds to reclaim the land affected, to buy machinery and tools; fishermen who had to repair the boat and / or replace equipment destroyed or lost. In addition to this is the huge demand for funding for the reconstruction of houses destroyed or for the repair of houses damaged by the tsunami.

The microfinance sector in Sri Lanka has received for these purposes a considerable amount of money. International agencies, organizations usually working in the field and often NGOs have turned to MFIs offering different solutions: from donations to the emergency, to combinations of donations and soft loans for the resumption of production activities.<sup>8</sup> The provisions of funds by the Italian Civil Protection to Etimos arrive early after the event and the intervention started by the second half of 2005, when, after the immediate emergency phase, the population was working to restore normal economic conditions. The houses were rebuilt and it became crucial to support the rebuilding of micro entrepreneurial activities, formal but also informal, which had to ensure the survival of the poorest sections of the population. The intervention is aimed at microfinance institutions (MFIs) of different nature (NGOs, development banks, cooperative movement), which reflect the structure of the sector at national level. Among the beneficiaries of

<sup>6</sup> The actors are called upon to implement such a measure can be identified as follows: i) A local institution, already present and operating in the affected areas, who knows the socio-economic context, able to interpret and may order priorities, and that takes care of a listening phase and the preliminary investigation; ii) An entity - public or private - that has availability of fund and may constitute a guarantee fund or a fund for providing micro-credit; iii) The banking system and / or Microfinance Institutions (MFIs), which evaluates the creditworthiness of the beneficiaries and operate as lending agency; iv) The final beneficiaries, families, businesses and non-profit organizations, but also, to international logic, the same MFI.

<sup>7</sup> For example, lines of capitalization for the strengthening of the local production, craft, micro- or agricultural-rural business, already present in the territory or to be started up; lines of credit for the support cooperatives of producers, already established or to be supported, or tools to connect and channel the flow of migrants' remittances to their countries of origin, using the financial vehicle of the MFI and thus encouraging a double financial inclusion upstream and downstream of the process.

<sup>8</sup> From the point of view of the volumes allocated, Asian Development Bank has invested the largest amount of money through the programs implemented by the Central Bank of Sri Lanka and the Ministry of Finance. The circle of donors and international donors related to the field of microfinance has again played the most active and dominate role. In 2006 there were made 20 "Microfinance Schemes", for a total amount paid of Rs. 27,664,000, equal to \$ 276 million. Not all entities implementers are distinguished by efficiency and effectiveness but some of them had a strong impact on the territory for an excellent activation and mobilization of community lending. In the context of post-tsunami, the government has continued to support the field of microfinance and the "Small and Medium Enterprises" including forms of direct implementation realized by the two major financial institutions: the Ministry of Finance and the Central Bank. A negative effect of government intervention programs in favour of the Microfinance sector has been determined by the restrictions imposed on the final rate to be charged to the beneficiaries. The programs of the Central Bank and NDFT have been effective in terms of target group funded and speed of intervention. The placing on the market of money took place by placing constraints and restrictive conditions applicable, however, it has led to a mechanism of emulation and high competition among MFIs that has caused a race to the provision of micro financing at lower and lower rates, damaging the credit culture created through years of work.



this intervention, in this analysis we focus on Agro Micro Finance (AMF), an initiative of the Agromart Foundation which provides technical assistance and training for the creation of self-help groups aimed at conducting small businesses. Agro Micro Finance finances the final beneficiaries, especially in rural areas, through the village organizations, which are concerned with the selection of customers. The intervention in support of its microfinance activities was carried out in three ways: capitalization line, line of credit and capacity building.

The line of capitalization allows local MFIs to receive funds by paying a one-time 1% commission for monitoring. The initiative is designed to restore the operating conditions previous the tsunami and, subsequently, to support the development of organizations by strengthening the capital structure. The funds are included for the first two years in the liabilities of the balance sheet but do not involve the payment of interest or repayment of the capital. In this first phase they should be used for the purposes set out in the contract and any use is subject to monitoring by Etimos. Through the credit line, Etimos provides funding for a period of 3-4 years, to support the recovery of the productive activities of the beneficiaries or the launch of new business initiatives by micro entrepreneurs directly or indirectly affected by the tsunami. The loan is granted to organizations at an interest rate of 7%, with a repayment plan in monthly instalments and without requiring collateral. The rate of 7% is about 4 points percentage below the average rate at which organizations are funded on the market. The line of capacity building initiatives was to strengthen both institutions in the management of microcredit activities, both entrepreneurial skills of the beneficiaries of the institutions themselves. The loan is then directed to the strengthening of the institution and / or the beneficiaries of micro-credit: funding, assistance and training for the entrepreneur and the enterprise, and training and tutoring to staff and members of the institutions, the installation of a software created specially for the management of microfinance programs, counselling in the preparation of plans development. The training activities and consultancy funded involved training institutions both local and international present in the area.

The tsunami was an unexpected opportunity for growth for many of the MFIs affected. Through the total funds received by Etimos and other lenders, institutions were able to rebuild their assets and loan portfolio of fixed capital destroyed as a result of the disaster<sup>9</sup>.

## METHODOLOGY OF THE IMPACT EVALUATION

The first field data collection was implemented in April-June 2007. A group of Italian researchers delivered a questionnaire in three coastal districts in south Sri Lanka, namely Galle, Matara and Hambantota. Interviews were performed face-to-face to a sample of 200 damaged and 105 non-damaged randomly selected borrowers from the list of all the AMF customers in each district. The usual problem of ex-post impact analyses is the selection bias in the screening process so that observed differences between individuals who participate into a project and those who do not may depend on ex-ante (different) unobservable characteristics. The advantage in our case is that both the damaged and non-damaged samples consisted of *already selected* MFI borrowers, the only difference between the two groups being that *treatment* individuals have been hit by the shock (damaged) while *control* ones have not (non-damaged).<sup>10</sup> In other terms, both groups are likely to share the same observable and plausible unobservable ex ante factors which helped them to pass the screening of the same MFI (i.e. sense of entrepreneurship, trustworthiness, etc.).

Since the tsunami was unexpected it was impossible to arrange a panel survey with borrowers interviewed before and after tsunami. For this reason, in order to construct the pre-tsunami level of the variables/indicators of interest, a retrospective panel data approach (see McIntosh, Villaran&Wydict, 2011) specifically tailored for our case. In particular respondents were asked to declare the current and remember the past levels of memorable variables by making reference to four different time windows: (P1) six month interval before the first microfinance loan ever obtained; (P2) the period going from the first microfinance loan to the tsunami date (December 26, 2004); (P3) the period between the tsunami date and the first microfinance loan after tsunami; (P4) the period from the first microfinance loan after tsunami to the survey date (April 2007). A detailed description of this methodology and related issues is reported in Becchetti and Castriota (2009, 2011).

The second field data collection was conducted in November 2011-January 2012 to a random sample of AMF damaged and non-damage borrowers and consisted of the standard socio-demographic survey plus an experimental session aimed at eliciting social, time and risk preferences. In particular, we implemented a "Dictator Game" (DG), a standard and simple game largely adopted in the literature to elicit altruistic preferences in an incentive compatible way. This game involves two players, a Sender (S) and a Receiver (R). Their true identity is not revealed so that no player can identify whom (s)he is playing with. S is endowed with 900 LKR (the equivalent of 5.74 €) and has to decide how much of it to send to R; R takes no actions in this game and receives the amount of money S has sent. According to the

<sup>9</sup> Especially for smaller organizations, the funds received were also an important contribution to the strengthening of the position on the ground. Several could open new branches. New customers were acquired either in the early stages of reconstruction, especially when it felt the need to share, and after months of the cessation of the state of emergency. The availability of funds made possible investments for the improvement of internal processes, through the development of information systems and training of staff. The organizations affected establish new ties with potential international financing agencies. The instrument of credit has allowed Etimos to increase the resources available and to optimize their use. With an initial fund of 6,500,000 euro Etimos has provided funding for more than 10,000,000 euro. The initial provision is still almost intact and amounts to 5,200,000 euro (net of management fees and funds given to the agencies for capacity building).

<sup>10</sup> Hereon "damaged" borrowers are defined as those who report at least one damage from the tsunami.

classic utility theory, S's maximum utility is reached by sending 0 LKR and keeping the whole endowment (900 LKR). Any S's deviation from 0 can be interpreted as a measure of altruism.<sup>11</sup> The survey contains questions concerning socio-demographic information, social preferences and – as the questionnaire delivered in 2007 – the kind of damage they received in the 2004 on six dimensions, i.e. family members, house, economic activity, buildings/assets, working tools, raw materials. For further details on the experimental protocol, the sampling and the survey questions see Becchetti et al. (2012a). Note also that in this last wave we retrieve from AMF its bank records consisting of information on 767 loans issued from 1995 to 2011.

## MAIN RESULTS

### a) Findings from the first wave (2007)

The full set of results and robustness checks from the first wave of data collection are reported in Becchetti and Castriota (2009, 2011). First of all, the tsunami had significant consequences not only on material well-being but also on psychological and emotional aspect of borrowers' life. In particular, when comparing cumulative distributions of real household income and changes in life satisfaction from the second (pre-Tsunami) to the third period (post-Tsunami, i.e. from the shock to the first MFI refinancing) for the damaged and non damaged individuals, we find first-order stochastic dominance of the distribution for the former with respect to latter, the difference becoming larger for those registering more damages.<sup>12</sup> The change in income is significant for the damaged and not significant for the non-damaged sample, while there are abnormal changes in life satisfaction for damaged depending on the number of damages received. Importantly, the loss of income only partially accounts for the dip in wellbeing: the econometric analysis highlights the tsunami generated, net of income effect, a decrease in life satisfaction twice in magnitude its effect on the change in income. A more comprehensive presentation of the results is in the paper by Becchetti and Castriota (2009).

In order to evaluate the impact of microfinance as recovery tool after tsunami we look at the impact of the loan to income ratio<sup>13</sup> on changes in real income and work hours in the periods before and after the refinancing, i.e. from P3 to P4. From a descriptive point of view, those with a loan to income ratio below the sample median report a change in income from P3 to P4 of 21.8% against 86.4% for those above it. In the same direction, the change in weekly worked hours for the former is 4.9 against 15.6 of the latter. To summarize, the post-tsunami loan to income ratio had a significant effect on the borrowers' recovery in terms of change in income and work hours, the effect being larger for those who were damaged by the tsunami than for those who were not. Consistently with the income path after the tsunami, the refinancing loans were effective also under the point of view of the borrowers' life satisfaction and self-esteem, having the sample distribution of these subjective well-being indicators reached its pre-tsunami form. The refinancing effect is robust to econometric estimations accounting for composition effects, heterogeneity between the sample of damaged and non-damaged borrowers and in time windows, and various selection effects. A complete description of descriptive and academic findings is reported in Becchetti and Castriota (2011).

### b) Findings from the second wave (2011-2012)

Results and robustness checks from the second wave of data collection are reported in the more recent papers by Becchetti et al. (2012a, 2012b) in which damaged and non damaged borrowers' social preferences and the AMF's strategy in the post-disaster context are investigated.

As far as the impact of the tsunami on the borrower's social preferences is concerned, through the implementation of the dictator game described above we compare behavioural measures of altruism of damaged borrowers with those of the non-damaged ones and, within the former, among those reporting more damages (not only losses to the economic activity but also injury or damages to the house) vis-à-vis those reporting less damages (only losses to the economic activity). Results are summarized in table 1. The tsunami had a negative impact on victims' altruism even at a 7-years distance from the event: those reporting at least one damage send 6% less (if played as Sender) and expect 5% less (if played as Receiver) of the total endowment. However, if we restrict the analysis to the sample of only damaged people, we find that those who received more help because more severely damaged tend to give and expect relatively more than less damaged/less helped borrowers. A possible interpretation for this result may be generalised indirect reciprocity

<sup>11</sup> We conducted also two other games in order to collect behavioural measures of risk aversion and impatience which we use as additional controls in the econometric analysis. In particular, we implemented a "Risky investment game" to collect risk preferences through a simple game consisting of an investment decision. Each participant is endowed with 300 LKR and has to decide whether keeping the money or investing any portion  $x$  of it in a risky asset that has a 50% chance of success (option 2). The investment pays  $3x$  if successful but zero if unsuccessful; the decision maker keeps all uninvested units. The amount invested ( $x$ ) provides us with a rough proxy of risk aversion (the higher the investment, the less risk averse being the individual). With a final lottery we elicited also a behavioural measure of all participants' time preferences in a standard incentivized way: each participant has to choose between receiving a fixed payoff immediately vs. payoff increasing with the delay of the money delivery.

<sup>12</sup> To have an idea of the magnitudes, consider that non-damaged facing negative changes in life satisfaction are 20% while damaged are 65%.

<sup>13</sup> The loan to income ratio is the amount of the first loan received in the post-tsunami phase divided by the post-tsunami pre-refinancing monthly income.

(Stanca, 2010, Nowak and Sigmund, 2005) according to which a kind (or unkind) action received directly or indirectly for example by development aid agencies is reciprocated towards a *third* agent, in our case, the receiver in a dictator game. In other terms, we showed a possible indirect effect of recovery after calamities since the benevolence experienced from donors heals the loss of pro-social attitudes generated by the calamity shock. The results are robust to econometric analysis controlling for selection, omitted variable bias and separating the indirect effect of aids on altruism from those deriving direct from the calamity (for a complete description see Becchetti, et al. 2012a).

**Tab. 1-** Comparison of altruistic preferences.

<b>Groups</b>	<b>Share of giving</b>	<b>Share of Exp. giving</b>
Non damaged	37 %	44 %
damaged	31 %	39 %
<i>Among which</i>		
less damages (less aid)	29 %	33 %
more damages (more aid)	34 %	43 %

The banking strategy followed by AMF before, during and after the calamity has been described using the bank records retrieved in the last wave and have been matched with the borrowers' socio-demographic information collected in same wave. We focused on the determinants of loan amounts, interest rates and credit defaults and find: i) the standard lending rules based on bank sustainability (for instance, new loans obtainable conditionally on the repayment of previous ones) were suspended to help the tsunami-damage borrowers to recover; ii) having been damaged by the tsunami has no effect on credit defaults but a significant and unexpected increase in default rates of non-damaged borrowers is observed soon after the calamity and iii) the interest rates paid by non-damaged borrowers were lower than those paid by the damaged ones in the post-tsunami period. Consider that the last finding is consistent with the disaster recovery policy of ETIMOS and AMF aimed at reaching the most damaged individuals and sustaining their recovery through credit concession at more advantageous conditions in terms of loan amount and interest rates relative to those offered to less or non damaged ones (cross-subsidization policy). If this policy, on the one hand, determined the positive effects described above, it may have indirectly generated, on the other, incentives for non-damaged borrowers to declare strategic default because of the tsunami or to hide their true status, declaring for instance a higher amount of damages than the real in order to access new loans at low interest rate. Consistently, the data show strategic default and/or contagion effect may have been in place during and after the tsunami. Hence, while the support of AMF helped damaged people to avoid contagion and recover from the calamity, it may have indirectly generated moral hazard problems for non damaged ones. We advise a form of compulsory micro-insurance scheme (complementary to the loan) which can reduce the probability of moral hazard/strategic default for borrowers not affected by future calamities who expect an increase in their financial burden to subsidize calamity-affected ones. More details on these aspects are in Becchetti, et al. (2012b).

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